

Magnetic Characterization of Compensated Magnetic Materials

Vedoucí: Helena Reichlova, Ph.D.
(reichlh@fzu.cz)
Fyzikální ústav AV ČR



Conventionally, magnets are associated with ferromagnets, which exhibit a net magnetic moment. In our group, however, we focus on more complex magnetically ordered materials that possess internal magnetic order but no strong net magnetization. These materials are generally referred to as compensated magnets, encompassing systems such as antiferromagnets and altermagnets.

Characterizing their magnetic properties is an essential first step in understanding their behaviour. For this purpose, we use a Quantum Design MPMS3 magnetometer. The student project will involve measurements on various compensated magnetic samples and the subsequent analysis of the acquired data.

Main tasks

- Preparation of samples for magnetic measurements
- Designing and performing measurement using the MPMS3 system
- Collecting and analysing experimental data
- Preparing a short summary report of the results

Requirements

- Basic manual skills for sample preparation
- Basic knowledge of magnetism (Bachelor level)
- Working knowledge of English

What we offer

- Flexible working hours by agreement
- Student assistant position (DPP contract)
- Opportunity to work in an international research team
- Hands-on experience with emerging magnets and state-of-the-art magnetometry
- Possibility to extend the project into a bachelor's or master's thesis for motivated students

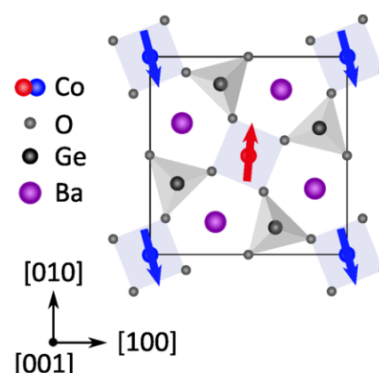


Figure 1: State of the art magnetometry will be performed by using QD MPMS3 (upper) on various samples of compensated magnets with complex spin structure, for example multiferroic Ba₂CoGeO₇ (lower)